National Institute of Environmental Health Sciences

The effect of rainfall during gestation and early childhood on adult height in a foraging and horticultural society of the Bolivian Amazon

Author(s): Godoy R, Tanner S, Reyes-Garcia V, Leonard WR, McDade TW, Vento M, Broesch J, Fitzpatrick IC, Giovannini P, Huanca T, Naveen Jha Bolivian TST

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Abstract:

Recent research documents the effects of adverse conditions during gestation and early childhood on growth responses and health throughout life. Most research linking adverse conditions in early life with adult health comes from industrial nations. We know little about the plasticity of growth responses to environmental perturbations early in life among foragers and horticulturalists. Using 2005 data from 211 women and 215 men 20+ years of age from a foraging-horticultural society of native Amazonians in Bolivia (Tsimane'), we estimate the association between (a) adult height and (b) rainfall amount and variability during three stages in the life cycle: gestation (year 0), birth year (year 1), and years 2-5. We control for confounders such as height of the same-sex parent. Rainfall amount and variability during gestation and birth year bore weak associations with adult height, probably from the protective role of placental physiology and breastfeeding. However, rainfall variability during years 2-5 of life bore a negative association with adult female height. Among women, a 10% increase in the coefficient of variation of rainfall during years 2-5 was associated with 0.7-1.2% lower adult height (1.08-1.93 cm). Environmental perturbations that take place after the cessation of weaning seem to leave the strongest effect on adult height. We advance possible explanations for the absence of effects among males.

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Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Public

Exposure :

weather or climate related pathway by which climate change affects health

Precipitation

Geographic Feature: ☑

resource focuses on specific type of geography

Tropical

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Developmental Effect

Developmental Effect: Other Functional Deficit

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Pregnant Women

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content